PUBLIC HEALTH LABORATORY

LABORATORY SERVICES GUIDE

MISSISSIPPI STATE DEPARTMENT OF HEALTH

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INTRODUCTION

The Mississippi State Public Health Laboratory is an organizational unit of the Mississippi State Department of Health. Clinical laboratory services are available to other Department of Health units, county health departments, independent laboratories, private physicians, hospitals and clinics. All requests for clinical tests must be made by a licensed physician or nurse practitioner. Reports cannot be made directly to patients.

Environmental services are available to other Department of Health units, county health departments, and sources approved by the Department of Health. Certain clinical and environmental tests are limited to the Department of Health and county health departments. Certain tests are limited to patients in specific health department programs. Other tests are on a fee basis for non-health department sources. Although routine diagnostic testing in certain areas cannot be provided outside the health department system, private physicians, hospitals, and laboratories are encouraged to contact us in special cases.

Rabies testing of animals is available to all Mississippi residents, with specimens preferably handled by the county health departments.

The Public Health Laboratory is licensed under the Clinical Laboratory Improvement Amendments (CLIA) of 1988 program and is approved by Medicare and Medicaid for all clinical tests performed. The lab participates in the College of American Pathologists, Wisconsin Public Health Lab, and American Association of Bioanalysts proficiency testing programs in clinical areas, Environmental Protection Agency's (EPA) Drinking Water Certification Program, Center for Disease Control's (CDC) Water Fluoridation Proficiency Testing Program, and Food and Drug Administration's (FDA) program for milk and food bacteriology. In addition, extensive daily in-house quality control is performed, and the lab undergoes periodic on-site inspections by CLIA, EPA, and FDA in order to meet the requirements of these programs.

The Public Health Laboratory is continually interested in the quality and accuracy of test results. If problems arise, please contact us at 601-576-7582.

Laboratory organization

Mailing Address:
Mississippi Public Health Lab
P.O. Box 1700
Jackson, MS 39215-1700

Shipping Address:
Mississippi Public Health Lab
570 E. Woodrow Wilson Drive
Jackson, MS 39216

Telephone: 601-576-7582 FAX: 601-576-7720 Emergency 601-576-7400
Web site: www.msdh.state.ms.us

Laboratory Sections:

Administration	Tuberculosis	Environmental Chemistry	Immunology
Reporting	Special Microbiology	Environmental Microbiology	
Shipping/Receiving	Chemistry/Hematology	STD/Mycology	

General Specimen Requirements

Patient name on specimen must match exactly with name on request form. If not, the specimen cannot be tested. Use specimen container and collection technique as outlined in this manual. Specimen container must be within expiration date. Leaking specimens cannot be tested. Please note that some select laboratory procedures require the approval of the Epidemiology Office or other agency program offices. A representative may be reached Monday through Friday 8am to 5pm at 601-576-7725 or 601-576-7400 on nights and weekends.

Reporting

Patient lab reports ordinarily are sent out the day the test is final. Results are not given over the phone.

Lab Operation Schedule

The lab is open from 7am to 5pm, Monday through Friday, and for a brief period on Saturday morning. The Public Health Laboratory follows standard Department of Health policy for holidays. Please consider this when submitting time-limited specimens, such as milk and water, during holiday periods.

Bacteriology

Anaerobic Culture
Submit pure culture in thioglycolate broth or anaerobic transport medium. Follow current infectious substance shipping regulations. Use Form # 402.

Botulism (Sent to CDC)
Do not send specimens without first contacting lab and epidemiology. Specimens accepted only after consultation with appropriate personnel at CDC.

Chlamydia / Gonorrhea by Genetic Probe (Health department maternity patients only)
Submit endocervical swab in special female transport tube available from lab. Use Form # 434. Place one specimen per biohazard bag with unfolded form in the pocket of the biohazard bag; then ship to the lab following current diagnostic specimen regulations.
Do not submit for children or a legal case.

Chlamydia / Gonorrhea by Genetic Probe (Selected sites)
Testing offered for clinics selected to participate in the Infertility Prevention Project. Submit endocervical swab in female collection tubes. Submit urethral swabs in male collection tubes. Use Form # 435. Place one specimen per biohazard bag, with unfolded form in the pocket of the biohazard bag; then ship following current diagnostic specimen regulations. Do not submit for children or a legal case.

Cholera and Non-Cholera *Vibrio*
Submit stool specimen in enteric culture bottle available from lab. Isolates also accepted. Follow current infectious substance shipping regulations. Use Form # 402.

Diphtheria Culture
Call lab for instructions.

Enteric culture-*Salmonella*/*Shigella*/*Campylobacter*/*E. coli* 0157
Daycare facilities wishing to submit cultures should contact Epidemiology at 601-576-7725 before collecting or submitting. Collect stool specimen in large clean container, bedpan, or on clean paper. Add and emulsify a portion of stool equivalent to about one half to one teaspoon using scoop attached to inside cap of enteric culture bottle. This bottle contains Cary-Blair transport medium and is available from lab. (**$1 each to non-health department sources**). Do not overfill the bottle. Fill to the fill line and ship using current diagnostic specimen regulations. Use Form # 402. Must be received within 96 hours of collection.

Gonorrhea Culture
Media (**$1 per plate of prepared media to non-health department sources**) must be stored in refrigerator and used before the expiration date. Collect specimen from the site of infection (cervix, urethra, rectum, throat, eye, etc.) and streak swab onto medium; incubate 24 hours to 72 hours at 35° C in a candle jar. After incubation, remove the cultures from the candle jar and place each culture in a biohazard bag (one culture per biohazard bag).

Place the appropriate request slip (Form # 455) in the outside pocket of the biohazard bag. Use one plate of media and one request slip for each collection site. Please indicate the collection site on the culture and the request slip.

Throat specimens or other extra-genital specimens must be indicated as such on form. **Please call the lab for instructions before sending child abuse or legal cases**. Package cultures according to current shipping regulations for diagnostic specimens.

Influenza Culture
Available only with approval from Epidemiology at 601-576-7725 or through Epidemiology's Sentinel Physician program. Ship cold and follow diagnostic specimen regulations.

Miscellaneous Cultures (eye, ear, superficial wound, other sites)
Send in Culturette or equivalent. Strep mailer is unsatisfactory. Use Form # 402. Isolates must follow current shipping regulations for infectious substances. Call lab before submitting unusual isolates. Culturettes may be shipped following diagnostic regulations.

***Salmonella*, *Shigella*, *E. coli* 0157, *N.meningitidis*, and Other Isolates - Confirmation and Grouping**
Submit on solid medium (without sugars) in screwcap tube; must follow current shipping regulations for infectious substances. Use Form # 402.

Tuberculosis (TB) and Other *Mycobacteria*
Sterile, leak-proof specimen containers are available upon request for acid-fast stain and culture. Follow current shipping regulations. Acid-fast stain is run on the day specimen is received. Isolation and ID may require up to 6 weeks. If *M. haemophilum* or *M. genavense* is suspected, please contact the TB Lab when specimen is sent.

- Sputum, Bronchial Washings, and Tracheal Aspirates - Submit five to ten mL in TB specimen container (available from lab).
- Gastric Lavage - Collect five to ten mL in a sterile container and add 100 mg of sodium carbonate (available from lab) within four hours of collection.
- Blood - Collect 5 mL and inject into a BACTEC 13A bottle (available from lab). Tubes with SPS and heparin may be used for transport when a 13A is unavailable. Do **not** use EDTA.

Tuberculosis (TB) and Other *Mycobacteria*, continued

- Urine - Collect 40 mL in a sterile container.
- Stool - Collect in a sterile, wax-free container, since wax may cause a false positive AFB smear.
- Body Fluids (CSF, Pleural, Peritoneal, Pericardial, etc) - Collect ten to 15 mL in a sterile container.
- Tissues (Lymph node, skin, other biopsy material) - Collect 1 gram of tissue in a sterile container. Do **not** immerse in saline or other fluid or wrap in gauze. Tissues in formalin are **not** acceptable.
- Abscess Contents, Aspirated Fluid, Skin Lesions, Wounds - If possible, send fluid in a sterile container. If volume is insufficient, send swab in transport medium (Amies or Stuart's); however, swabs are not recommended for the recovery of mycobacteria.

- Referred Isolate For Identification
  Submit pure culture on Lowenstein Jensen (LJ) slant or other appropriate medium. Ship according to current regulations for Infectious Substances. Use Form # 416. State site from which isolation was made.

- Drug Susceptibility
  Primary drugs are automatically done on first isolate of *M. tuberculosis* from a new patient and repeated at two month intervals as long as patient remains culture positive.

- Direct Probe for *M. tuberculosis* (MTD)
  The MTD is automatically done on smear positive respiratory specimens from new patients, but is performed on smear negative specimens by request only. The MTD test is approved only for respiratory specimens (sputum, tracheal aspirates, and bronchial specimens). The MTD is approved only for patients who are suspected of having pulmonary TB based on clinical evaluation and who have received no antituberculous therapy, less than seven days of such therapy, or have not received such therapy in the last 12 months. A negative MTD test does not exclude the possibility of isolating an *M. tuberculosis* complex organism on culture. **The MTD test must be performed and evaluated in conjunction with mycobacterial culture.**

Throat Culture (Group A *Streptococci*)
Kits available from lab (**$5 each to non-health department sources**). Take specimen with swab provided, place in silica gel packet, place in foil envelope, and ship according to current diagnostic specimen regulations. Use Form # 402. Only specimens in Strep Mailer Kits will be accepted.

Urine Culture / Susceptibility (Health department maternity and family planning patients only) Specimen must be an appropriately collected clean-catch urine. An inadequately collected specimen invalidates results. Submit in a special urine transport tube (available from Central Supply). Ship according to current diagnostic specimen regulations. Use Form #402. Must be received within 48 hours of collection. Report includes colony count and probable significance. In choosing an antibiotic, consider dosages, warnings, and limitations. Consult the *Physician's Desk Reference* or pharmacy.

Vaginal Culture for Group B *Streptococci* (Health department maternity patients)
Use Strep Collection Kit (silica gel packet) and Form #402. Ship to lab according to current diagnostic specimen regulations.

Whooping Cough (Pertussis)
Call lab for instructions.

Clinical Chemistry/Glucose

Routine Chemistry (Health departments only)
Submit at least 3 mL serum in properly collected and centrifuged serum-separator tube without an anticoagulant. Avoid hemolysis; it renders many tests unsatisfactory. Lipemia interferes with many tests. Ship according to current regulations for clinical specimens. The report will include reference ranges. Severely abnormal levels that may constitute a medical emergency will be reported by phone and fax. **Please order only those tests necessary for your patient. Federal guidelines for Medicare/Medicaid patients state that claims for unnecessary tests may be subject to civil penalties**. Please help our lab avoid this by ordering only tests related to relevant diagnosis codes. Order each test individually on form # 405. Provide patient diagnosis code(s) and name of ordering physician.

Tests available: (check each test desired, give name of physician, and patient diagnosis codes)

Sodium	BUN	AST (SGOT)	Total Cholesterol
Chloride	Creatinine	ALT (SGPT)	HDL Cholesterol (12 hour fasting)
Potassium	Uric Acid	Total Bilirubin	Triglycerides (overnight fasting)
Glucose			

Glucose (Health departments only)
If glucose is ordered as one of several chemistry tests, it should be ordered on Form # 405 and run from the serum-separator tube as the other chemistries. If glucose is ordered as a single test or part of a tolerance test, use a serum separator tube and Form # 406.

Food Poisoning Bacteria

Specimens are limited to actual outbreaks and must be submitted through local health departments. Contact General Environmental Services Food Protection Division at 601-576-7689 or Epidemiology at 601-576-7725 before submitting. Collect at least 25 grams of each suspect food in sterile containers. Ship on ice in blue milk mailer. Use Form # 402. Provide symptoms and time of onset. Raw foods that are ordinarily cooked before eating are not routinely accepted. **Chemical or toxin tests and identification of foreign materials are not performed by this lab. Do not submit these specimens!**

Hematology/Immunohematology

Antibody Screen, Antibody ID and Titer (Health department maternity patients only)
Collect 5 mL blood in a lavender top tube. Use Form # 402. **The test requires a separate blood tube in addition to the Rh tube**. Submit following diagnostic specimen shipping regulations. If screening test is positive, antibody is identified. Titers are performed on all antibodies that are considered significant because they cross the placenta. Consult program recommendations for further information and instructions.

CD4 (Lymphocyte Immunophenotyping, T Cell) (Health departments only)
Allow a lavender top tube to completely fill. The manufacturer adds the correct amount of anti-coagulant for the tube size. If the tube is allowed to completely fill, the correct blood to anti-coagulant ratio will be achieved. Invert gently several times. Label tube with name, date, and time of collection. Submit to the lab with a Form # 402 and do not refrigerate. Specimens must be received by the lab within 24 hours of collection. Reference ranges are included in patient report. **Do not draw on Friday.** Ship as infectious substance. Results are sent to STD/HIV Program Office.

Complete Blood Count (Health departments only)
Allow a lavender top tube to completely fill. The manufacturer adds the correct amount of anti-coagulant for the tube size. If the tube is allowed to completely fill, the correct blood to anti-coagulant ratio will be achieved. Invert gently several times. Specimens must be received by the laboratory within 24 hours of collection. Use Form # 403. Follow current diagnostic shipping regulations. Reference ranges are included in patient report. Severely abnormal values that may constitute a medical emergency will be reported by phone and fax.

Newborn Screening Hemoglobin Confirmation
Collect specimens per instructions of Genetic Screening Program. Submit in lavender top microtainer type tube. Use Form # 402. Attach Genetic Screening label as well as PIMS label. Follow current diagnostic shipping regulations. Results are sent to the Genetics Program Office.

HIV-1 PCR (Viral Load) (Health departments only) **Available only for previously diagnosed HIV-positive patients**. Collect blood in a plasma-separator plastic Vacutainer tube with a pearlescent white top. This has an anticoagulant and must be **mixed** several times. **Never open the tube**. Centrifuge for 20 minutes within two hours of drawing. Submit to the lab with a Form # 402. Follow infectious substance shipping regulations. Specimens must be received by the laboratory within 24 hours of collection. **Do not draw on Friday**.

Qualitative HIV Test (Health departments only)
This assay will only be performed at the request of the STD/HIV program office. Allow a lavender top tube to completely fill and invert several times to prevent clotting. The manufacturer adds the correct amount of anti-coagulant for the tube size. If the tube is allowed to completely fill, the correct blood to anti-coagulant ratio will be achieved. Ship as infectious substance. These samples **can** be drawn on Friday.

Pregnancy Testing (Quantitative serum HCG) (Health departments only)
Submit 5 mL whole blood in a red top tube. Use Form # 402. All results are quantitated. Expected ranges are included in patient report. Ship following current diagnostic specimen regulations.

Rh Type (Health department maternity patients only)
Collect 5 mL blood in a lavender top tube. Use Form # 402. Ship according to current regulations for diagnostic specimens. If previous results are available, it is not necessary to repeat this test.

Sickle Cell Screening (Hemoglobin Electrophoresis)
(Fee **of $2.50 to non-health department sources**.) Prior arrangements for billing must be made. This test is for adults and children over six months old. It is not for newborn screening. If previous results are available, it is not necessary to repeat this test. Submit dried blood spot about the size of a dime on blotter paper strip available from the lab, or submit 1 mL to 2 mL blood in a lavender top tube. Use Form # 402.

Immunology

Arbovirus Screening (Human, equine, bird, and mosquito)
Available through Epidemiology Office. Call 601-576-7725 for information and instructions for submissions.

Hepatitis A Antibody (Epidemiology only)
For use in outbreak investigations with special permission from the Epidemiology Office. Results are reported directly to Epidemiology. Collect 7 mL whole blood in red top tube. Use diagnostic specimen shipping regulations. Use Form # 402 and indicate Hepatitis A antibody as examination desired.

Hepatitis B Surface Antigen (Health departments only)
Submit 7 mL whole blood in red top tube. Do not use serum separator tube. Use Form # 499, 1/6/99 revision and **fill out completely**. Follow diagnostic specimen shipping regulations. A hepatitis profile consisting of Hepatitis B Core Antibody and Hepatitis B Core IgM Antibody is run on all first time positive patients. Any patient positive for surface antigen should be considered infectious.

Hepatitis B Core Antibody (Health departments only)
For contacts to positive maternity patients and employees who have not been immunized at the time of hire. Submit 7 mL whole blood in red top tube, following diagnostic specimen shipping regulations. Use Form # 499, 1/6/99 revision.

Hepatitis C Antibody (Health department employees following occupational exposure)
For use only in employee occupational exposure cases or with special permission from the Epidemiology Office. Submit 7 mL whole blood in a red top tube, following diagnostic specimen shipping regulations. Use Form # 402 and indicate HCV as examination desired.

Human Immunodeficiency Virus Antibodies (HIV)
Collect 7 mL whole blood in red top tube. Form # 364 or # 363 must be completely filled out and accompany specimen. Place in biohazard bag; then ship in sturdy container following guidelines for diagnostic specimens. Antibody testing is not recommended for children under 18 months of age. **Any blood specimen from a person known or highly suspect for HIV infection, no matter what test is ordered, should be shipped as an infectious substance**. Be aware that the testing sequence may take several weeks. A positive test does not necessarily indicate active infection; false positive tests can occur. For initially reactive patients, a repeat specimen is indicated. **This assay is for HIV antibody, and can be nonreactive in early infections.** An indeterminate result by Western Blot indicates repeat testing after a minimum of four weeks. For specific recommendations and questions concerning patient management, consult HIV/STD Program Manual. Contact lab for technical questions concerning testing.

No patient information or results can be given by the laboratory. Contact HIV/STD Program office at 601-576-7723.

Measles IgG Antibody (Health departments only)
Submit 7 mL whole blood in red top tube. Use Form # 402. Follow diagnostic specimen shipping regulations.

Rubella IgG Antibody (Health departments only)
Submit 7 mL whole blood in red top tube. Use Form # 402. Follow diagnostic specimen shipping regulations. **If previous results indicate immunity, it is not necessary to repeat this test.**

Syphilis Serology
(Fee to non-health department sources. **Prepaid request slips are $1 each from the lab**.)

- RPR (Syphilis screening test)
  Submit 5 mL whole blood in red top tube. Plasma is unacceptable. Use Form # 450. Ship following current diagnostic specimen regulations. All reactive reports will include a titer. A confirmatory test for syphilis is performed on all reactive RPR's. Note that serologic tests for syphilis become reactive four to six weeks after infection or one to three weeks after appearance of the chancre. Tests performed before this time may be nonreactive.

- Syphilis Confirmation Test (TP-PA and/or FTA)
  Submit 5 mL whole blood in red top tube. Use Form # 402. Ship following diagnostic specimen regulations. These tests are not useful or indicated if patient has a previous history of syphilis. If a patient has a nonreactive RPR, but is experiencing physical symptoms suggesting late syphilis (ocular, cardiovascular, or neurological), call the lab for special arrangements.

Interpretation of Syphilis Test Results
RPR reactive / Confirmatory Test reactive - indicates past or present infection
RPR reactive / Confirmatory Test nonreactive - biological false positive; may occur with inflammatory disease, infection, immunizations, certain drugs, pregnancy, or aging.
RPR nonreactive - Confirmatory test is not indicated unless late syphilis is suspected based on clinical evaluation.
Refer to HIV/STD Manual for additional information.

Varicella Zoster IgG Antibody (Health departments only)
Submit 7 mL whole blood in red top tube. Use form # 402. Follow diagnostic specimen shipping regulations.

Milk Testing

Note: Milk testing is available to health departments only.
Milk sampling schedules are arranged by the Environmental Microbiology Supervisor and the Milk Environmentalist. Routine milk samples are not accepted Friday through Sunday. Samples must be received within 48 hours after collection.

Raw Milk
Fill sterile six ounce Whirlpak bag (available from lab) no more than three fourths full. Ship in blue polyfoam shipper supplied by lab. Place sample bags in a large plastic bag; close with tape or rubber band; place inside bag that lines shipper; add crushed ice to fill remaining space in shipper. Include temperature control. Complete Form # 431 and place between outer and inner lids of shipper.

Processed Milk and Dairy Products
Submit in retail container. Ship in blue polyfoam shipper using procedure described under Raw Milk. Complete Form # 430. Temperature control must be at least one half the size of the largest container. Refer to Milk Program for further instructions, interpretation of results, and regulatory actions.

Mycology

Systemic Mycoses

Submit isolates or inoculated media only. Do not send raw specimens since fungal agents survive poorly in body fluids and should be processed immediately. Ship cultures according to current infectious substances regulations. Health department clinics should call the Mycology lab at 601-576-7582 for special instructions to submit a specimen for fungus culture .

Parasitology

Routine parasitology screening of asymptomatic individuals is not recommended. Daycare facilities wishing to submit samples should contact Epidemiology at 601-576-7725.

Amoebic Trophozoites
For patients with severe, prolonged diarrhea. Contact lab for collection bottle and instructions.

Blood Parasites / Malaria
Contact lab for instructions.

Cryptosporidium*, *Cyclospora*, and *Microsporidium
Exams for these are done on special request. Please contact the lab before sending.

Ova and Cysts (OCP)
($1 per bottle fee to non-health department sources .) Collect stool specimen in clean container or on clean paper. Add about one half to one teaspoon of stool to parasite bottle containing 10% formalin fixative and emulsify. Do not fill above the fill line. Use Form # 402. Place specimen in biohazard bag and ship according to current diagnostic specimen regulations.

Pinworm
Use clear (not Magic brand) cellulose tape. Use only enough tape to cover top of slide. Do not wrap tape around slide. Using tongue depressor or equivalent, touch sticky side of tape strip to perianal region. Stick tape to clean microscope slide. Place in protective mailer or cardboard to prevent breakage. Use Form #402. Place slip and slide in a white envelope labeled “Pinworm Exam”. Ship according to current diagnostic specimen guidelines. Do not mail in same package as pap smears.

Rabies

Rabies Virus by DFA
Submit through local health department if possible; this assures overnight delivery in most cases. **Live animals are not accepted**. Caged rodents like hamsters and white mice not accepted unless documented special circumstances warrant testing. **Consult the Division of Epidemiology for more information.**

Use yellow rabies shipper available at each local health department. Place head of dead animal in large, leak-proof plastic bag. Small animals fitting in the shipper with sufficient cold packs may be shipped whole. Seal and place bag inside the bag lining the shipping container. Add sufficient cold packs or frozen, leak-proof plastic bottles of water to maintain specimen at cold temperatures during transit. **Do not damage the brain! Do not use wet ice!** Place Rabies Form # 433, 5/19/98 Revision, between outer and inner lids of shipper. **Avoid freezing animal head; this delays testing as much as one day. If shipping a specimen for rabies testing on the weekend, please notify the rabies lab on Friday**. If more than one specimen must be shipped in one container, note this prominently on outside of shipper.

All positive results are reported immediately by phone to Epidemiology. The Epidemiologist on call then relays report and treatment information to the appropriate health department or other submitter.

Drinking Water Microbiology

Presence of Total Coliforms and *E. coli*
Submit sample in sterile four ounce bottle containing sodium thiosulfate (available from lab). **Do not rinse bottle**. Fill to 100 mL line or above. Use appropriate form (# 425- Routine; # 426 - Resample; or #427 -Monitoring Sample). Wrap request form around bottle and secure with rubber band. Send in two inch by five inch unlined mailer available from lab or other sturdy container. **Specimens must reach lab within 30 hrs of collection**. Older samples cannot be processed. Possible results are: Total Coliform and *E. coli* absent; Total Coliform present; or *E. coli* present. For status of regulated supplies or remedial actions for unsatisfactory samples, contact Water Supply Program. Samples from public water supplies will not be accepted from individuals. Contact Water Supply Program at 601-576-7518 to register complaints.

Drinking Water Chemistry

The Safe Drinking Water Act establishes primary drinking water regulations and other regulations applicable to public water systems. The Water Supply Program oversees monitoring schedules and data handling. Analyte categories include: Trace Metals, Inorganics, Insecticides, Carbamates, Herbicides, Polychlorinated Biphenyls, PAH's, Adipate/Phthalates, Miscellaneous SOC's, Trihalomethanes, Haloacetics, TOCs, Bromates and Volatile Organic Compounds. For questions involving sampling, containers, request forms, and shipping, contact the laboratory or Water Supply Division.

Fluoridated Supplies Monitoring (regulated supplies only)
Collect in four ounce microbiology water sample bottle available from lab. Rinse out bottle with water to be sampled. Fill to within one half inch of top. Use Form # 428.

Routine Drinking Water Physical/Chemical-Partial Analyses
Collect at least one pint of water directly from the well into a clean glass or plastic container after pumping at least 20 minutes. Do not collect from pressure tank or house faucet. Rinse container thoroughly with sample water before filling. Use Physical/Chemical Water Analysis Form. Tests include pH, alkalinity, chloride, free carbon dioxide, iron and hardness.

Routine Drinking Water Physical/Chemical-Complete Analyses
Collect as for Partial, but submit at least one half gallon of water. Tests include Partial Analyses plus color, sulfate, fluoride, magnesium, calcium, sodium, potassium, and total dissolved residue.

Lead Testing ($10 per sample fee to non-health department sources.)
Contact lab for special collection container and mailer. Include a check payable to Public Health Laboratory for $10 times the number of samples to be tested. Collect sample and submit in mailer per instructions provided. If multiple samples are sent, number or identify each sample according to location, etc. After testing, lab will report results and interpretation by mail.

Autoclave Sterility Check

(Health department and Colpo clinics only)

Submit test ampules that have been treated in the following manner: Store in refrigerator at 2° C to 8° C . Do not freeze. Do not use past expiration date. Retain Certificate of Analysis. Label one ampule “test” and place in a basket or other container with a maximum registering thermometer (MRT). Autoclave with a full load at 121° C for 15 minutes. Record MRT value. Use caution when handling ampule after sterilization. Contents are hot and under pressure. Allow to cool 15 minutes before removing from basket. Label an ampule that has not be autoclaved as “control”. Wrap both “test” and “control” ampules carefully in packing material for shipping . Ship the same day as tested in a two inch by six inch unlined mailer (available from the lab). Label mailer, “Attention: Environmental Microbiology.” Include completed Form # 402. Ship Monday through Wednesday only.

APPENDIX A

Test Information Summary

Test	Collection	Specimen	Form Number
Anaerobic Culture	Anaerobic Transport Tube	Exudate	402
Botulism	Call Lab	Stool, Serum	
Chlamydia/GC Probe	Chlamydia Collection Kit	Cervix/ Urethra	434
Cholera	Call Lab	Stool	402
Diphtheria	Call Lab	Throat Swab	402
Enteric Culture	Enteric Culture Bottle	Stool	402
Gonorrhea Culture	GC Culture Media	Cervix/Urethra/ Throat/Rectum	455
Influenza Culture	Viral transport medium	Throat or nasal swab	402
Miscellaneous Culture	Culturette	As Indicated	402
Salmonella, *Shigella*, *E. coli:O157*, *N. meningitidis*, and other isolates	Isolation Media/Tube	Stool, isolate	402
Tuberculosis	TB Specimen Container	Sputum, Etc.	416
TB Isolate	LJ Slant	Sputum, Etc.	416
Throat Culture	Strep Collection Kit	Throat Swab	402
Urine Culture	Urine Transport Tube	Urine	402
Vaginal Culture			
Group B Strep	Strep Collection Kit	Vaginal Swab	402
Whooping Cough	Call Lab	Perinasal Swab	402
Clinical Chemistry Tests	Serum Separator Tube	Serum	405
Glucose Only	Serum Separator Tube	Serum	406
Food Poisoning Bacteria	Sterile Container	Food	402
CBC with Platelets	Lavender Top Tube	Whole Blood	403
Sickle Cell Test	Blood On Filter Paper Or Lavender Top Tube	Whole Blood	402
Hemoglobin Confirmation	Lavender Top Microtainer	Whole Blood	402
Rh Type (Maternity)	Lavender Top Tube	Whole Blood	402
Antibody Screen (Maternity)	Lavender Top Tube	Whole Blood	402
Syphilis Confirmation Tests	Red Top Tube	Whole Blood	402
Hepatitis B Tests	Red Top Tube	Whole Blood	499
Hepatitis A Tests	Red Top Tube	Whole Blood	402

Hepatitis C Tests	Red Top Tube	Whole Blood	402
HIV (AIDS)	Red Top Tube	Whole Blood	364
HIV-1 PCR (Viral load)	Plasma Separator Tube (White Top)	Plasma	402
Qualitative HIV Test	Lavender Top Tube	Whole Blood	402
CD4 (T-Cell) Test	Lavender Top Tube	Whole Blood	402
Serum HCG (Pregnancy test)	Red Top Tube	Whole Blood	402
Rubella IgG Antibody	Red Top Tube	Whole Blood	402
Varicella IgG Antibody	Red Top Tube	Whole Blood	402
Measles IgG Antibody	Red Top Tube	Whole Blood	402
Arbovirus Serology	Call Epidemiology		
RPR/Syphilis confirmation	Red Top Tube	Whole Blood	450
Raw Milk	Whirlpak Bag	Milk	431
Dairy Products	Retail Container	Milk	430
Systemic Fungus Isolates	Isolation Medium	Sputum, Body Fluids	402
Ova and Cysts (parasitology)	Parasite Bottle	Stool	402
Amoebic Trophozoites	Call Lab	Stool	402
Blood Parasites/Malaria	Call Lab	Blood	402
Pinworm	Cellulose Tape Slide	Perianal Touch Prep	402
Cryptosporidium, *Cyclospora*, *Microsporidium*	Call Lab	Stool	402
Rabies	Leakproof Plastic Bag	Animal Head	433
Drinking Water Bacteria	Sterile 4oz Bottle	Water	425/426/427
Lead (In Water)	Call Lab	Water	Lead Form

APPENDIX B

Supplies Available From Laboratory

(*Denotes Fee to Non-Health Department Sources)

*Strep Collection Kit	Request # Needed
TB Sputum Container	Boxes of 24
*Enteric Culture Bottle	Request # Needed
*Parasite Bottle	Request # Needed
Sickle Cell Blotter Strips	Packages of 50
Sterile 4oz Water Bottle	Boxes of 12
*GC Culture Media	Boxes of 50 or Packs of 10
Gen-Probe Collection Kits	Request # Needed
*Lead (Water) Container	Request # Needed
Urine Transport Tubes	Central Supply
Blood Collection Tubes	Central Supply

Shippers:

1” x 5” Mailer	Boxes of 24 or 48
2” x 5” Mailer	Boxes of 24 or 48
HIV Double Mailer	Request # Needed
Biohazard Specimen Bag	Packages of 50
Blood Box	Packages of 12

Forms:

402	Miscellaneous	Pkg of 200
403	CBC	Pad of 50
405	Clinical Chemistry	Pad of 50
406	Glucose/ A1c (glycated hgb)	Pkg of 100
416	TB Culture	Pkg of 100
425	Water Bacteriology	Pkg of 100
426	Resample	Pkg of 100
427	Monitoring	Pkg of 100

428	Fluoride	Pkg of 50
430	Processed Milk	Individually
431	Raw Milk	Individually
*450	RPR	Pkg of 200 or Individually
455	GC Culture	Pkg of 100
477	Lab Mailing Label	Pkg of 100
499	Hepatitis B	Pkg of 50
363	HIV Jail Program/ MDOC sites (green print)	Request # Needed
364	HIV (all other sites)	Request # Needed
434	Chlamydia/ GC by Genetic Probe Maternity Program	Request # Needed
435	Chlamydia/ GC by Genetic Probe Region IV Infertility Project	Request # Needed

APPENDIX C

Lab Fee Schedule for Non-Health Department Sources

GC Culture	$ 1.00	per plate of prepared media
Strep Collection Kit	$ 5.00	per kit
Sickle Cell Test	$ 2.50	per test
RPR	$ 1.00	per prepaid request slip
Enteric Culture Bottle	$ 1.00	each
Parasite Bottle	$ 1.00	each
Lead (In Water)	$10.00	per test

Non-Health Department submitters will be billed for shipping.

APPENDIX D

GC Culture Collection and Incubation

Each morning, check and record the incubator temperature. If it exceeds 37° C, lower it. The ideal temperature for *Neisseria gonorrhoeae* to grow is 35° C. Each day of use, remove an adequate amount of media from the refrigerator. Check the expiration date. **Do not use expired media.** Allow media to reach room temperature before using, usually 30 minutes. Reseal unused media in bags and return the unused portion to the refrigerator.

For females, a cervical specimen is preferred. The speculum may be moistened with warm water, but do not use any other lubricant. Remove cervical mucus, then insert a sterile swab into the endocervical canal and move the swab from side to side, allowing several seconds for absorption. If a vaginal specimen is necessary, use a speculum to obtain the specimen from the posterior vaginal vault or obtain it from the vaginal orifice if the hymen is intact.

For males, use a sterile swab to collect a urethral specimen or exudate.

As soon as the swab is taken, streak it over the surface of the medium in a Z pattern, rolling the swab so that all parts contact the medium. Cross-streak the plate with the same swab to spread the inoculum. Be careful not to break the medium surface; but if the surface is broken, do not discard. Tape the plate shut, but do not seal air-tight. Write the patient's name and date on the medium side of the plate. Immediately place the culture in a clean candle jar. With medium side up, light the candle and place it in the candle jar. Place the lid on the jar and tighten. (Candle jars may be washed in warm soapy water and dried with a clean cloth as needed. Colored or scented candles should not be used.) **Important: Each time the candle jar is opened, relight the candle and reseal the jar as soon as possible**. If possible, place the jar in the incubator at this time. If not, do so as soon as possible at the end of the clinic. Take care not to break the thermometer when moving the jar in or out of the incubator. Incubate cultures 24 hours not to exceed 72 hours at 35° C. After incubation, remove cultures from candle jar, pack and ship to the lab according to the current shipping regulations for diagnostic specimens. Cultures **must** be incubated at least 24 hours, preferably 48 hours. Specimens collected on Thursday should be incubated for 24 hours and shipped Friday. Specimens collected on Friday should be incubated until Monday morning and shipped to the lab on Monday evening. Please call the lab if you have any questions.

APPENDIX E

Basic Shipping Guidelines

The following shipping regulations are current at the time of printing, but always refer to the most recent shipping regulations. Packaging and shipping regulations for Infectious Substances and Diagnostic Specimens are updated annually. Before submitting specimens in either of these two categories, be certain your shipping containers and labeling meet the current regulations. The **shipper** is responsible for safe transport, and severe penalties are prescribed for failure to meet the guidelines. Submitters outside the health department system should contact their carrier for possible additional requirements. Health departments should contact the Public Health Laboratory with questions regarding shipping.

Shipping Guidelines for Mississippi County Health Departments
Using the State Contract Courier Service

Many laboratory tests require additional or more specific instructions. These instructions are found under the test to be performed.
DOT - Ground shipping is regulated by the Department of Transportation (DOT). See www.dot.gov or http://hazmat.dot.gov/ for the latest rules and regulations concerning shipping. Beginning February 14, 2003 DOT will regulate the shipment of diagnostic specimens as well as the shipment of infectious substances in the United States. "Diagnostic specimens must be packaged in triple packaging, consisting of a primary receptacle, a secondary packaging, and an outer packaging."

Exception to DOT shipping regulations: A diagnostic specimen or biological product when transported by a private or contract carrier in a motor vehicle used exclusively to transport diagnostic specimens or biological products.

Diagnostic Specimens – "any human or animal material, including excreta, secreta, blood and its components, tissue, and tissue fluids being transported for diagnostic or investigational purposes..."

1. Place the specimen container (leak-proof for liquid specimens and sift-proof for solid specimens) inside a biohazard bag. **(One specimen per bag!)** If the specimen is liquid, place enough absorbent material to absorb contents. Maximum quantity must not exceed 500 mL or 500 g. Most biohazard bags provided by the MSDH Public Health Lab contain a sheet of absorbent that will absorb the volume printed on the absorbent sheet.
2. Seal the bag so that it is leak-proof.
3. Place the data slip, **unfolded** with the data slip facing outward in the pocket of the biohazard bag. Do **not** place the slip inside the biohazard bag with the specimen.
4. Use a separate biohazard bag for each specimen. If specimen containers are breakable; secure them with cushioning material so that they will not break in transit.
5. Place the biohazard bags into a sturdy box or other rigid outer container, maximum quantity not exceeding 4 L or 4 Kg. Do **not** overcrowd tubes!
6. MSDH Request - Label the outer container with the type of testing to be performed.

In order to meet DOT regulations for ground transportation (transportation not covered under the exception for contract carriers), the following must also be met:

1. The triple packagings must be capable of passing a 1.2 meter (3.9 feet) drop test.
2. An itemized list of contents must be placed between the secondary packaging and the outer packaging. (EX: 12 - 7mL tubes of blood for HIV testing)
3. The outer packaging must be clearly and durably marked with the words "DIAGNOSTIC SPECIMEN" or "DIAGNOSTIC SPECIMENS."
4. If dry ice is used, the miscellaneous hazard label and the net quantity in Kg should be on the outside of the package.
5. The training requirement for packaging and shipping diagnostic specimens is that "each person who offers or transports a diagnostic specimen … must know about the requirements…"

Infectious Substances – "…a material known to contain or suspected of containing a pathogen … that has the potential to cause disease in humans or animals."

1. Inner packagings comprising:
    a. A specimen container that is a watertight primary receptacle – (Maximum quantity of 50 mL or 50 g)
    b. A watertight secondary packaging
    c. When the primary receptacle contains liquids, an absorbent material must be placed between the primary receptacle and the secondary packaging. If multiple-primary receptacles are placed in a single secondary packaging, they must be wrapped individually to ensure that contact between them is prevented. The absorbent material must be sufficient to absorb the entire contents of all primary receptacles.
    d. Place data slip on the outside of the secondary packaging.
2. For all packages containing infectious substances, an itemized list of contents must be placed between the secondary packaging and the outer packaging.
3. Combination packaging must be used that bears the UN specification markings for Class 6.2 (Maximum quantity of 4 L or 4 Kg per outer package).
4. Name and telephone number of person responsible for the shipment must be on the outside of the package and the shipper's declaration.
5. A shipper's declaration is required for all infectious substances.
6. The shipper must be a trained person with training recurring every 3 years.
7. Diagnostic specimens meeting the definition of Risk Group 4 material must be classed and transported as an infectious substance.

Shipping Guidelines for Carriers Using IATA Regulations

Always refer to the most recent IATA regulations (www.IATA.org) printed annually. The International Air Transport Association (IATA) regulates international shipments by air; however some carriers require all shipments of diagnostic specimens and infectious substances to be packaged according to IATA regulations.

"3.3.4.1 Guidance – Classification of Diagnostic Substances – As a result of the 2003 amendments, specimens known or suspected of containing pathogens meeting the criteria for risk groups 2 or 3 may be transported as diagnostic specimens when they are transported for diagnostic or investigational purposes. Specimens known or suspected of containing risk group 4 pathogens must be classified in Division 6.2… Packing instruction 650 is appropriate for the transport of diagnostic specimens containing pathogens belonging to risk group 2 and 3;"

"Cultures intended for diagnostic and clinical purposes" may be shipped as diagnostic specimens. - *IATA Infectious Substances and Diagnostic Specimens Shipping Guidelines 4th Ed.*

Diagnostic Specimen – "Any human or animal material including, but not limited to, excreta, secreta, blood and its components, tissue and tissue fluids, being shipped for purposes of diagnosis, but excluding live infected animals."

1. A watertight specimen container for liquid specimens not exceeding 500mL or a siftproof specimen container for solid specimens not exceeding 500 g.
2. A watertight secondary packaging
3. Sufficient absorbent material between the primary receptacle and secondary packaging (not required for solid specimens).
4. If multiple primary receptacles are placed in a single secondary packaging, they must be wrapped individually.
5. Outer packaging not exceeding 4 L for liquid specimens and 4 Kg for solid specimens.
6. An itemized list of contents must be placed between the secondary packaging and the outer packaging.
7. Each package must show the text "DIAGNOSTIC SPECIMEN PACKED IN COMPLIANCE WITH IATA PACKING INSTRUCTION 650" and "UN 3373."
8. The net quantity of the contents of the package in mL, g, or Kg must be marked on the outside of the package.
9. If dry ice is used, it must be listed on the air waybill under the Nature and Quantity of Goods Column as "Dry Ice, Class 9, UN1845, (___*quantity in Kg*___)."
10. *Liquid* diagnostic specimens shipped *by air* must be packaged in packaging capable of withstanding, without leakage, an internal pressure producing a pressure differential of not less than 95 KPa. Each completed package must be capable of passing the drop test of not less than 1.2 m.
11. Beginning January 1, 2004 all diagnostic specimen packages must be marked to indicate that the shipper has determined that the packaging meets the applicable air transport requirements. The marking must be applied adjacent to the words "Diagnostic Specimens".

Infectious Substance – "Substances known to contain, or reasonably expected to contain, pathogens."

1. All of the above with the exception of number seven.
    a. Passenger and Cargo Aircraft - Maximum quantity per package is 50 mL or 50 g.
    b. Cargo Aircraft Only - Maximum quantity per package is four L or four Kg.
    c. Special Provision A81 – Body fluids containing infectious substances packaged in primary receptacles not exceeding 1000 mL and outer packagings not exceeding 4 L may be shipped Passenger and Cargo Aircraft.
2. Must use combination packaging that bears the UN specification markings, which shows that the packaging has passed the test requirements for packagings of infectious substances.
3. Must be accompanied by a shipper's declaration.
4. Name and telephone number of person responsible for shipment must be on the shipper's declaration and the package.
5. Advance arrangements must be made between the shipper, operator or consignee.
6. Shipper training is required upon the employment of a person, with recurrent training taking place within 24 months.
7. Beginning January 1, 2003, all packages must be marked with the quantity of the infectious substance.
8. If dry ice is used, it must be declared on the shipper's declaration.
9. Beginning January 1, 2004 all infectious substance packages must be marked to indicate that the shipper has determined that the packaging meets the applicable air transport requirements. The marking must be applied adjacent to the Proper Shipping Name and UN number markings.

Dry Ice – Always place dry ice outside of the secondary packaging. Dry ice should never be placed inside the primary or secondary containers because of the risk of explosion.

United States Postal Service (USPS) - For shipping specimens through the USPS, regulations are found in the Domestic Mail Manual or at www.usps.com. In 2003, the USPS shipping regulations are becoming more consistent with the IATA and DOT regulations. One exception is a maximum quantity of 50 mL or 50 g of infectious substance per mail piece and a maximum quantity of dry ice per package of 5 pounds.

References: ***IATA Infectious Substances and Diagnostic Specimens Shipping Guidelines*****, 4th Ed.; 49 CFR Part 171 et. al. Hazardous Materials: Revision to Standards for Infectious Substances; Final Rule; US Postal Service Domestic Mail Manual (DMM); and World Health Organization** ***"Guidelines for the Safe Transport of Infectious Substances and Diagnostic Specimens" Appendix E undated 4/30/03***

INDICATIVE EXAMPLES OF INFECTIOUS SUBSTANCES FORBIDDEN AS DIAGNOSTIC SPECIMENS IN ANY FORM UNLESS OTHERWISE INDICATED	
UN Number and Proper Shipping Name	**Micro-organism**
UN 2814 Infectious substance, affecting humans	*Bacillus anthracis* (cultures only) *Brucella abortus* (cultures only) *Brucella melitensis* (cultures only) *Brucella suis* (cultures only) *Burkholderia mallei - Pseudomonas mallei* – Glanders (cultures only) *Burkholderia pseudomallei – Pseudomonas pseudomallei* (cultures only) *Chlamydia psittaci* - avian strains (cultures only) *Clostridium botulinum* (cultures only) *Coccidioides immitis* (cultures only) *Coxiella burnetii* (cultures only) Crimean-Congo hemorrhagic fever virus Dengue virus (cultures only) Eastern equine encephalitis virus (cultures only) *Escherichia coli*, verotoxigenic (cultures only) Ebola virus Flexal virus *Francisella tularensis* (cultures only) Guanarito virus Hantaan virus Hantaviruses causing hantavirus pulmonary syndrome Hendra virus Hepatitis B virus (cultures only) Herpes B virus (cultures only) Human immunodeficiency virus (cultures only) Highly pathogenic avian influenza virus (cultures only) Japanese Encephalitis virus (cultures only) Junin virus Kyasanur Forest disease virus Lassa virus Machupo virus Marburg virus Monkeypox virus *Mycobacterium tuberculosis* (cultures only) Nipah virus Omsk hemorrhagic fever virus Poliovirus (cultures only) Rabies virus *Rickettsia prowazekii* (cultures only) *Rickettsia rickettsii* (cultures only) Rift Valley fever virus Russian spring-summer encephalitis virus (cultures only) Sabia virus *Shigella dysenteriae* type 1 (cultures only) Tick-borne encephalitis virus (cultures only) Variola virus Venezuelan equine encephalitis virus West Nile virus (cultures only) Yellow fever virus (cultures only) *Yersinia pestis* (cultures only)

INDICATIVE EXAMPLES OF INFECTIOUS SUBSTANCES FORBIDDEN AS DIAGNOSTIC SPECIMENS IN ANY FORM UNLESS OTHERWISE INDICATED	
UN Number and Proper Shipping Name	**Micro-organism**
UN 2900 Infectious substance, affecting animals	African horse sickness virus African swine fever virus Avian paramyxovirus Type 1 - Newcastle disease virus Bluetongue virus Classical swine fever virus Foot and mouth disease virus Lumpy skin disease virus *Mycoplasma mycoides* - Contagious bovine pleuropneumonia Peste des petits ruminants virus Rinderpest virus Sheep-pox virus Goatpox virus Swine vesicular disease virus Vesicular stomatitis virus